

## **Savannah River Site Citizens Advisory Board**

### **Recommendation #277 FY 2013 Integrated Priority List and Budget Input**

#### **Background.**

H Canyon, a unique national asset, is the only hardened nuclear chemical separations plant still in operation in the U.S. By Public Law 106-398, October 30, 2000 H Canyon and F Canyon must be maintained in a high state of readiness, along with the technical staff required for operations. This law, among other requirements, called for a plan by February 15, 2001 to transfer all long-term chemical separation activities at SRS from F Canyon to H Canyon, commencing in fiscal year 2002.

The H Canyon facility can contribute to research and development in a number of nuclear fuel processing areas. It is a well maintained facility run by experienced personnel. Performing R&D reprocessing in H Canyon could be used to extend the number of reactor cycles resulting in a significant burn up of U-235 fuel. H Canyon can process and supply used actinide fuel that can be burned in fast modular reactors to reduce long term highly radioactive waste. H Canyon and Modular Reactors might be used to close the fuel cycle.

H Canyon is needed as a support for L Basin (built in 1956). L Basin is almost full of foreign and domestic used fuel assemblies, with approximately 100 more casks anticipated. The facility is needed to process this fuel which will eventually be burned in TVA's commercial reactors. Without H Canyon operable, L Basin may have to add expensive storage space. Additionally, H Canyon can be used to back up L Basin should it experience leakage or other safety problems. L Basin is scheduled to be deinventoried by 2019 and H Canyon needs to be operable until at least that date.

However, the President's proposed 2012 budget calls for H Canyon to be shut down and its systems flushed by December 31, 2011. There is also a consideration for reducing operations and staff to a minimum safe level. It is currently projected that H Canyon will have completed processing UNF, plutonium, and HEU by mid-summer 2011. If the facility is closed, or taken down to min safe, bringing it up to code and re-staffing would pose considerable financial costs. An alternative, and more cost effective approach, would be to remove from the larger inventory a small subset of materials for continued processing in H Canyon until decisions for all the materials involved are concluded. This course of action would have the additional value of simultaneously preparing some of the more vulnerable materials on site for disposition and avoiding schedule delays while awaiting decision for the larger amounts of material.

#### **Comments.**

The Savannah River Citizens Advisory Board (CAB) has recently received two presentations from SRS DOE representatives regarding ongoing and potential activities in the H Canyon facility. On January 7, 2011 the CAB was provided with an update indicating that the facility continues to operate solvent extraction cycles to purify enriched uranium solution from dissolved unirradiated HEU solution and blend down for MOX/TVA. The HB-Line is continuing dissolution of limited plutonium materials which are unsuitable as feed for MOX. Current programs will reach completion within the fiscal year. Preparations for UNF processing are under consideration which involves an approved upgraded Documented Safety Analysis (DSA), revising facility procedures, updating operator training, a completed readiness assessment, and identification of initial UNF assemblies to be processed.

Previous NEPA decisions were key to preparations for UNF processing: The 1996 Foreign Research Reactor (FRR) Environmental Impact Statement (EIS) and Record of Decision (ROD) provided for U.S. receipt of FRR materials of U.S. origin. The EIS and ROD issued in 2001 provided for Melt and Dilute of Al-clad UNF which would be cast in disks and placed in cans for disposal with low level waste canisters. Processing the UNF through H Canyon was

evaluated as an alternative. In 2006, the DOE approved the Uranium Disposition Project which included processing unirradiated HEU materials and the Al-clad UNF, recovering enriched uranium, down-blending to low enriched uranium (LEU) and shipping it to TVA, pending re-issuance of an amended ROD for UNF processing. In 2010, SRS developed and submitted a Safety Analysis (SA) and amended ROD to support UNF processing.

The January 7 update also indicated that a readiness assessment has been completed and H Canyon is ready to begin processing. The Supplemental Safety Analysis and Amended ROD to support processing/recycling UNF in H Canyon are currently under consideration.

At the March 29, 2011 full board CAB meeting a review of Dr. David Moody's February 22 Congressional briefing was presented, indicating the national importance of H Canyon and HB Line. The briefing included SRS plans to initiate activities in H Canyon Line to establish SRS as the center for Advanced Fuel Cycle research and development. Modifications to H Canyon would be required to demonstrate proof-of-concept or pilot-scale operations while retaining the Canyon's current capabilities. Current capabilities include use of H Canyon to remove organics, poison, and neutralizing SRNL and F Area lab returns prior to their transfer to the liquid waste system. The potential new mission for H Canyon/HB Line included continued R&D on Vacuum Salt Distillation in HB Line for the removal of chlorides and fluoride in non-MOXable plutonium and anticipating NASA's needs for proposed outer planet exploration. UNF processing is not precluded in the concept, including the development of an integrated project to stabilize and/or disposition UNF that is reactive or difficult to place in dry storage as warranted.

Due to its concern for the effective utilization of H Canyon for the immediate future, the SRS CAB has previously submitted two recommendations (#275 and #276) to DOE. Recommendation # 275 addresses H Canyon's ideal capabilities for feasibility and cost studies for many aspects of reprocessing and the potential for using UNF currently being stored in L Basin to support this work. This recommendation also mentions the likelihood that the Blue Ribbon Committee (BRC) may suggest that reprocessing UNF is a viable option to be further studied. Recommendation #276 addresses the key factors of efficiency and economy of operations, potential loss of capability, increased safety risks to workers and public, and impact on stakeholders. The recommendation suggests prioritizing H Canyon operations along with the emphasis on liquid high-level waste activities through processing at risk nuclear materials such as UNF and plutonium while disposition options on some materials and budget decisions are still pending.

### **Recommendations:**

The unique capabilities of H-Canyon were recognized by the SRS CAB back in 1999 and since then the SRS CAB has recommended that it be retained in an operational status as a process for current and future stabilization missions. The unique capabilities of H-Canyon have not changed nor has the SRS CAB's recognition of the processes of H-Canyon and related facilities as a national asset. Therefore, the SRS CAB recommends the following concerning the FY2013 budget:

Prioritize funding to place emphasis on the following three programs:

1. **PBS 11C H- Canyon/HB Line** to operate at a level that allows disposition of Pu in HB Line and processes Used Nuclear Fuel (HEU) in H- Canyon (and any Pu deemed necessary).
2. **PBS 12 L-Area** to operate at a mode to fully receive off-site Used Nuclear Fuel as scheduled and ship L Basin Inventory of UNF to be processed in H Canyon.
3. **PBS 14C to operate the Liquid Waste Stabilization and Disposition System** at maximum capacity and expedite the processing rate with the Supplemental Salt Waste Processing Deployment.

**Recommendation #277**

**Adopted May 24, 2011**

**Sponsored by Strategic & Legacy Management Committee**